Space Weather Forecast

Issued on Monday, 26 February 2024 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Ongoing likelihood of Moderate flares with a slight chance of Strong flares/S1 Proton Storms throughout and G1/Minor geomagnetic storms day 1 (26 Feb).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate, with a solitary Moderate flare originating from large sunspot in the northwest disc on 25 Feb. There are six numbered regions on the disc and one unnumbered region. The aforementioned large spot in the northwest is the only numbered region of note. It is magnetically complex but with little overall change in appearance and complexity. It has several linked spots of opposite polarity that share penumbra making it magnetically unstable. The remaining regions on the disc are simpler and much smaller. The as yet unnumbered region in the far northeast appears as a bipolar group, perhaps with north-south magnetic alignment and a moderate amount of magnetic flux.

There were no Earth directed coronal mass ejections (CMEs) observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were observed at background to slightly elevated levels, with ongoing but limited influence from a weak, glancing coronal mass ejection that arrived late on 24 Feb. Total Interplanetary Magnetic field started moderate before easing to weak by 26/0900 UTC. The north-south component was largely weak to moderately positive (northward) until around 25/2300 UTC, then mainly weak to moderately negative (southward) until 26/1030 UTC. Geomagnetic activity was Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels, with no Solar Radiation Storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to Low, with a likelihood of further M-flares and a slight chance of rising to High with isolated X-flares, primarily from AR3590.

Solar Wind / Geomagnetic Activity: Slightly elevated solar winds may become elevated on day 1 (26 Feb), resulting from the possible onset of the coronal hole fast wind wind, before easing day 2 (27 Feb) onwards towards background levels. Quiet to Unsettled geomagnetic activity at first, possible becoming Unsettled to Active with a slight chance of G1 Minor Storms from the coronal hole fast wind onset on day 1 (26 Feb). Quiet to Unsettled activity expected days 2-4 (27-29 Feb).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background levels, but with a risk of becoming enhanced in the circumstance of any further significant flares from the large sunspot in the northwest disc. This giving a slight chance of exceeding the S1 Minor Radiation Storm level.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	5	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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